

CLAIMS

What is claimed is:

1. An electrical component system comprising:
5 an enclosure;
an electrical component disposed within the enclosure;
an at least partially open rail structure supported within the enclosure, wherein
power and network data signals are carried along the rail structure; and
a connector assembly adapted to complete an electrical connection between the
10 component and the rail structure to provide power and network data signals to the
component.

2. The system of claim 1, wherein the component is disposed on a component
support within the enclosure.

15 3. The system of claim 1, wherein the rail structure carries a first level of
power signals over a first set of power conductors.

4. The system of claim 3, wherein the rail structure carries a second level of
power signals over a second set of power conductors.

20 5. The system of claim 4, wherein the first and second sets of power
conductors provide different levels of power.

25 6. The system of claim 5, wherein the different power levels include a level of
ac power and a level of dc power.

7. The system of claim 4, wherein the rail structure includes at least one first capacitor coupled across the first set of power conductors and at least one second capacitor coupled across the second set of power conductor.

5 8. The system of claim 1, wherein the rail structure carries a neutral conductor.

9. The system of claim 1, wherein the rail structure carries a ground conductor.

10 10. The system of claim 1, comprising network data conductors at an innermost cross sectional position on the rail structure and power conductors at flanking positions with respect to the network data conductors.

11. The system of claim 10, comprising a second set of power conductors disposed at an outermost cross sectional position on the rail structure.

15 12. The system of claim 1, comprising network data conductors at a cross sectional position on the rail structure between first and second sets of power conductors.

20 13. The system of claim 1, wherein the rail structure includes at least one capacitor coupled across the power conductors.

25 14. A rail system for transmitting power and data signals comprising:
an insulative support;
first and second power conductors supported lengthwise on the support and configured to conduct electrical power; and
first and second data conductors supported lengthwise on the support and disposed between the power conductors and configured to transmit data signals.

15. The system of claim 14, wherein the power conductors at least partially shield the data conductors from electromagnetic interference.

5 16. The system of claim 14, further comprising at least one capacitor coupled across the power conductors.

10 17. The system of claim 14, further comprising a second set of power conductors supported lengthwise on the support at cross sectional outermost positions on either side of the first and second power conductors.

15 18. The system of claim 14, wherein the conductors are uninsulated conductive rails.

19. The system of claim 14, wherein the first and second data conductors are spaced from one another by a first, substantially constant predetermined distance.

20. The system of claim 19, wherein the first and second power conductors are spaced from respective data conductors by a second, substantially constant predetermined distance.

20 21. The system of claim 20, wherein the first predetermined distance is equal to the second predetermined distance.

25 22. A rail system for transmitting power and data signals comprising:
an insulative support;
a first set of power conductors supported lengthwise on the support and configured to conduct electrical power;
a second set of power conductors supported lengthwise on the support and configured to conduct electrical power; and

first and second data conductors supported lengthwise on the support and configured to transmit data signals.

23. The system of claim 22, wherein if the first set of power conductors are identified as A and B, the second set of power conductors are identified as C and D, and the data conductors are identified as E and F, the conductors are disposed cross-sectionally on the support in the order A, C, E, F, D, B.

24. The system of claim 23, wherein conductors A and B are configured to transmit ac power.

25. The system of claim 24, wherein conductors C and D are configured to transmit dc power.

26. The system of claim 22, wherein if the first set of power conductors are identified as A and B, the second set of power conductors are identified as C and D, and the data conductors are identified as E and F, the conductors are disposed cross sectionally on the support in the order A, E, C, D, F, B.

27. The system of claim 26, wherein conductors A and B are configured to transmit ac power.

28. The system of claim 26, wherein conductors C and D are configured to transmit dc power.

29. The system of claim 22, further comprising a first capacitor coupled across the first set of power conductors.

30. The system of claim 29, further comprising a second capacitor coupled across the second set of power conductors.

31. The system of claim 22, wherein the conductors are disposed at substantially equal spacing across the support.

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32. An open rail system for transmitting power and data signals comprising:
an insulative support;
first and second data conductors supported lengthwise on the support and
configured to transmit data signals;

10 a first set of power conductors supported lengthwise on the support at positions flanking the data conductors and configured to conduct electrical power;
a second set of power conductors supported lengthwise on the support at positions flanking respective power conductors of the first set and configured to conduct electrical power; and

15 a capacitor coupled across the first set of power conductors.

33. The system of claim 32, further comprising a second capacitor coupled across the second set of power conductors.

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34. The system of claim 32, wherein the first set of power conductors transmits dc power.

35. The system of claim 34, wherein the second set of power conductors
25 transmits ac power.

36. The system of claim 32, wherein the first set of power conductors
transmits ac power.

37. The system of claim 36, wherein the second set of power conductors transmits dc power.